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REALISM AS A POLEMIC AND PROGRAM OF REFORM. II

IN an earlier paper[1] I have expounded six general errors that seem to me to contain the substance of the charge which realism brings against the traditional philosophy. These errors are the following: (1) argument from the ego-centric predicament, or the claim that the cognitive ubiquity of the knowing subject is proof of its ontological necessity; (2) pseudo-simplicity, or failure to distinguish between the simplicity of the familiar, and the simplicity that is tested by analysis; (3) transcendent implication, or the inference from content to something beyond content; (4) exclusive particularity, or the supposition that a term can belong to a single system only; (5) the speculative dogma, or the assumption that there is an all-general, all-sufficient principle; (6) verbal suggestion, or the use of words for the sake of their associations rather than their exact denotation and connotation.

That these errors are by no means unrelated, will appear on a brief comparison of them. (1) The argument from the ego-centric predicament leads to the conclusion that knowing is a universal condition of being. It follows that every philosophical problem must be complicated by the problem of epistemology. This is a most prolifiic source of that ambiguity and confusion which is so generally characteristic of philosophical terminology. The same error lends support to the speculative dogma, through identifying reality with the ideal of knowledge. Again, since this error leads so directly to the contradictions of solipsism, it furnishes a motive for the error of transcendental implication; which here serves as a means of escape from the relativities of the individual knower to the standards of an absolute knower. (2) The error of pseudo-simplicity almost invariably accompanies that of argument from the ego-centric predicament, through the importance which attaches in the latter to the "subject" as a datum correlated with every "object." The error of pseudo-simplicity also lends a specious plausibility to transcend-

[1] This JOURNAL, Vol. VII., No. 13.

ent implication and to the speculative dogma. (3) The error of transcendent implication is a means of escape from the solipsistic consequences of the first error, and a means of supporting the speculative dogma. It is one of the principle motives for the use of verbal suggestion. (4) The error of exclusive particularity is joined with the argument from the ego-centric predicament in all phenomenalistic and idealistic philosophies; and it forces these philosophies to resort to some sort of dualism in order to provide for the generality which is necessary for knowledge. It thus creates, in the case of idealism, an occasion for the error of transcendent implication. The "transcendental" individual or objective subjectivity which results, supplies an object for the speculative dogma. (5) The speculative dogma is the principal cause of hasty and ill-considered generalizations in philosophy, and so encourages the use of illegitimate methods of arriving at ultimate concepts. In modern times, the speculative dogma has found its chief support in the ego-centric predicament, but the errors of pseudo-simplicity, transcendent implication and verbal suggestion have been its faithful allies. (6) Verbal suggestion is the means through which the real barrenness and futility of such errors as the foregoing are concealed, and specious conceptions given an established place in philosophical tradition.

The inter-relation of these errors will appear more clearly in the philosophical systems in which they are committed. I now propose, in the light of this definition of general errors, to summarize the polemic of realism against other contemporary theories.

II. The Realistic Critique of Contemporary Philosophy

For the purposes of this summary I shall divide contemporary philosophy, excepting realism, into naturalism, idealism, absolutism, and pragmatism.

1. *Naturalism.*—Realism agrees in a measure with naturalism, in that both unqualifiedly accept the results of the natural sciences, and regard the mathematical sciences as the best model of exact thinking. But realism, in common with all other contemporary tendencies, rejects the naturalistic contention that natural science is the only branch of knowledge, or that the physical object is the only individual.

Naturalism appears in two forms, the speculative form, or materialism, and the critical form, or experimentalism. The former consists in the assertion of the universality of some physical substance, such as matter, force, or energy. Crude or naïve materialism involves the error of pseudo-simplicity, due in this case to the bias of the organism for the bodily type of complex. In its philosophical

development, materialism is dominated by the speculative dogma; and the attempt to construe matter, force, or energy as all-general and all-sufficient has led to that variety of equivocation and verbal suggestion that vitiates the fundamental concepts of all "reduction" philosophies. But the most flagrant defect in materialism is its epistemological dualism, involving the error of transcendent implication. Matter, force or energy is construed as a substratum, and illegitimately inferred from phenomenal appearances.

Critical naturalism, or experimentalism, is based upon an analysis of the physical object into elements of content, and a definition of the fundamental concepts of science as ratios or formulations involving these elements. This analysis realism accepts. But experimentalism, through its selection of local and quantitative verification as the test of truth virtually asserts that the physical hypothesis is the only admissible hypothesis and the physical complex the only "fact." This assertion realism regards as wholly arbitrary and untenable, since it affords no account of other complexes, such, *e. g.*, as geometry and consciousness. The experimentalist is influenced, no doubt, by the error of exclusive particularity. He construes his world at the outset as a series of localized sense-complexes, and disregards the possibility that the elements of these complexes may belong also to other complexes. The realist, on the other hand, having resolved the physical complex into general or logical elements, is enabled to discover several complexes in which these elements belong; with the result that the physical complex loses its uniqueness.

This same error of exclusive particularity involves the experimentalist in a dualism between perception, sensation, or fact, on the one hand, and conception, construct, or hypothesis, on the other. The second factor of knowledge is introduced to provide permanence, order, and generality. Since these are not found, they must be made. With the experimentalist they are man-made, pragmatic and historical. This dualism, a method of confusion resulting in failure, is avoided by the realistic principle of multiple particularity. Permanence, order, and generality are accounted for by the fact that a concept may be in a perceptual complex and yet not of it.

2. *Idealism.*—Realism agrees with idealism in assigning limits to natural science, although there is a difference amounting to one of principle in the grounds on which these limits are assigned. For idealism, science is deficient in validity, and thus never wholly true; for realism, science is deficient in scope, and thus not the whole truth.

Realism agrees with Kantian idealism, also, in asserting the categorized and articulated structure of the world. But realism dis-

sents from the status which idealism assigns to the categories. For idealism they are "presuppositions," or acts of an "epistemological subject," arrived at through the error of transcendental implication; while for realism they are immanent, or parts of the objects of knowledge.

But the basal defect in idealism, as found in the realistic indictment, is subjectivism, or the assertion that consciousness is a universal condition of being. This assertion may in most cases be traced to the argument from the ego-centric predicament, involving the fallacies of *petitio principii,* redundancy, or agreement. It obtains support also from the error of pseudo-simplicity, which in this case encourages the supposition that ego, will, subject, or consciousness is known because it is familiar and stereotyped. The difference between idealism and realism respecting consciousness is peculiarly far-reaching. That which idealism regards as of primary ontological importance, realism regards as incidental. The neo-realistic reconstruction of idealism is more strictly comparable to the Copernican revolution than was the Kantian reconstruction of dogmatic realism. For it consists essentially in a decentralization. As in the Copernican system the earth loses its uniqueness and becomes a planet, so in neo-realism the ego loses its uniqueness and becomes an object among objects.

3. *Absolutism.*[2]—Although absolutism is at present almost wholly identified with idealism, it has a separate history and an independent motive. Absolutism is essentially the philosophy of the speculative dogma. It seeks to define an all-general, all-sufficient principle in terms of complete knowledge, in terms of a maximum of truth inferred from the approximations of human knowledge. Realism denies that logic at present affords any conception of a maximum of truth. There is a general logical principle requiring that the number of fundamental propositions in a system shall be *as few as possible.* A true system can contain neither redundancy nor superfluity. But *how few* the fundamental propositions can be is not logically determinate. A universe that had as many postulates as terms, as many laws as events, would not be irrational or unintelligible. Humanly speaking it would be difficult to know such a universe, much more difficult, for example, then to know a monotonous or simple world. But there is no reason why the world should serve our convenience in this matter—any more than, as a matter of fact, it does.

Nor can any maximum of truth be defined on grounds of universal relationship. There is no good reason, I believe, for supposing

[2] Cf. my article entitled "The Futility of Absolutism," in the April number of the *Hibbert Journal.*

that every entity is related to every other entity. The answer to this question must be postponed until the meaning of irrelevance, manyness, and difference has been rigorously examined by the methods of modern logic. But in any case, everything points to the relative triviality of the ubiquitous relations. A system, for example, of which the principle of combination was difference, and the class the totality of entities, would amount to no more than an aggregate of particular items of knowledge—the endless repetition of the assertion of difference. And such a system, though it might in a sense be all-comprehensive, would be more nearly a minimum of truth than a maximum of truth. Every proposition of real cognitive importance would in such a system be reduced to the status of a term having no predicate but difference.

It is the inadequacy of the most general propositions that makes absolutism so inveterately liable to formalism. Absolutism is the philosophical mountain that labors and brings forth a mouse. It combines the grand manner with the most trivial assertions. And such is the power of words and scholastic prestige, that it has begotten a reverence for empty and confused conceptions. "For the contentions and sophistical kind of philosophy," says Bacon, "ensnares the understanding, but this kind, being fanciful and timid and half poetical, misleads it more by flattery. For there is in man an ambition of the understanding, no less than of the will, especially in high and lofty spirits."[3]

4. *Pragmatism.*—With pragmatism's attempt to dispel the absolutist's illusions of grandeur, realism is in hearty sympathy. Pragmatism has shown not only that absolutism in general is a meaningless and unverifiable hypothesis, but that a certain futility and inconsequential character pervades all its works. And the controversies aroused by pragmatism have demonstrated a fundamental difference among contemporary philosophers between those who feel themselves to be adventurers discovering new lands, and those who feel that they are walking about in a sort of patrimonial estate. The pragmatist phenomenology of truth was first ignored by absolutism, then denied, and finally claimed by right of eminent domain. During this incident, the realist's sympathies, owing doubtless to a self-preservative instinct, have been almost wholly with the pragmatist.

The charges which realism brings against pragmatism are directed not against the pragmatist conception of truth, strictly and narrowly construed, but against certain generalizations with which it is allied under the names of "humanism" and "anti-intellectualism."

Humanism is tainted by both subjectivism and nominalism.

[3] Bacon, "Novum Organum," edition of Ellis and Spedding, Vol. IV., p. 66.

These have resulted, doubtless, from the more fundamental error of exclusive particularity, inherited from Hume. For humanism, "facts" belong wholly to the temporal flow of consciousness. The world obtains its structure through the historical ideating activity of man controlled by practical motives. But this constructive process, albeit it flows more slowly, is itself a flux like the passing states upon which it supervenes. Concepts pass down the stream of time more slowly than percepts, but they are none the less essentially transient in character. The result is that the world is inherently self-contradictory; it may alienate its own fundamental nature, or annihilate itself retroactively. When the pragmatist theory of truth is thus construed it strikes so deep as to undermine itself. Humanism, like idealism, puts mind in the hopeless predicament of standing in midair and trying to organize a world out of parts that have no inherent structural properties. Realism does not deny that true beliefs "work," or "fulfill a purpose," nor does it deny that this throws much light upon the history of civilization. But it asserts that *if* a belief works or fulfills a purpose, this must be because it adjusts an organism to an environment. Beliefs can not by their practical success construct their environment, because they owe their success to their consistency with that environment.

Anti-intellectualism reflects the humanistic conception of thought as an instrument made for man's use. What man has made he may also unmake, or at least hold in subjection. Anti-intellectualism is also due on its negative side to a misconception of analysis. Analysis is not a process of decomposition or of fixation, but simply and solely the process of discovery *carried through*. It is as much concerned with wholes and connections and changes, as with simple terms. It does not represent any special cognitive interest, but the cognitive interest in general, when this is pure and self-consistent. When the anti-intellectualist urges us to forsake logic for life, he does so on grounds afforded not by life, but by logic. The positive assertions of anti-intellectualism arise, on the other hand, from the error of pseudo-simplicity, from mistaking the immediate and familiar life-experience for insight. In a certain sense we know anything that we may act on, and talk, think, or feel about automatically. In this sense we always know the old better than the new, and may even cherish a certain intimacy with our ignorance. But the moral is unmistakable. Familiarity and immediacy, because they soothe nescience, and tempt to a relaxation of scientific rigor, should be charted not as harbors of refuge but as shoals and reefs that menace the unwary voyager.

It does not fall within the scope of this paper to attempt a systematic statement of realistic doctrine. Indeed, I am inclined to

believe that the success of the realistic movement would involve its own disappearance as a propaganda, and the appearance in place of it of one science of philosophy in which all investigators should work together without party or school designation. I shall conclude with the outline of a general course of procedure, or program of reform, which seems to me to be the proper sequel of the realistic polemic.

III. The Realistic Program of Reform

I am not one those who believe that the defects of philosophical procedure are irremediable. Philosophy has repeatedly thrown off its bad habits, and aroused itself to critical vigilance. Furthermore, there is good ground for asserting that there has never before been so great an opportunity of reform. For logic and mathematics, the traditional models of procedure, are themselves being submitted to a searching revision that has already thrown a new light on the general principles of exact thinking. And there is promise of more light to come. For science has for all time become reflectively conscious of its own method. The era of quarrelsome misunderstanding between criticism and positive knowledge is giving way to an era of united and complementary endeavor. It must not be forgotten that philosophy is peculiarly dependent on logic. Natural science in its empirical and experimental phases can safely be guided by instinct, because it operates in the field of objects defined by common sense. But the very objects of philosophy are the fruit of analysis. Its task is the correction of the categories of common sense, and all hope of a profitable and valid result must be based on an expert critical judgment. The present situation, then, affords philosophy an opportunity of adopting a more rigorous procedure and assuming a more systematic form. And it is with reference to this opportunity that I repeat here the advice which is our common inheritance from the great philosophical reformers. None of these canons is original, but all are, I think, pertinent and timely.

1. *The Scrupulous Use of Words.*—This is moral rather than a logical canon. There is need in philosophy of a greater fastidiousness and nicety in the use of words. A regard for words is, in philosophy, the surest proof of a sensitive scientific conscience. For words are the instruments of philosophical procedure, and deserve the same care as the lancet of the surgeon or the balance of the chemist. A complacent and superior disregard of words is as fatuous as it is offensive. It is a healthier intellectual symptom to feel as MacIan felt in Chesterton's "Ball and the Cross." "Why shouldn't we quarrel about a word? What is the good of words if they aren't important enough to quarrel over? Why do we choose

one word more than another if there isn't any difference between them? If you called a woman a chimpanzee instead of an angel, wouldn't there be a quarrel about a word? If you're not going to argue about words, what are you going to argue about? Are you going to convey your meaning to me by moving your ears? The church and the heresies always used to fight about words, because they are the only things worth fighting about."[4]

2. *Definition.*—"The light of human minds," says Hobbes, "is perspicuous words, but by exact definitions first snuffed and purged from all ambiguities." Words are properly signs. They are serviceable in proportion as they are self-effacing. A skillful word will introduce the hearer or reader to his object, and then retire; only the awkward word will call attention to itself. It follows, then, that the only means of escaping quarrels about words is to use words with discrimination, with careful reference to their objective purport, or usefulness as means of access to ideas. Furthermore, a word is essentially a social instrument, whether used for record or communication; and requires that its relation to an object or idea shall be agreed on and conventionalized. This is the only means of bringing several minds together in a common topic of discourse. "Syllables," says John Toland, "though never so well put together, if they have not ideas fix'd to them, are but words spoken in the air, and can not be the ground of a reasonable service."[5]

Philosophy is peculiarly dependent upon a clear definition of the reference of words because, as we have already seen, its objects are not those of common sense. It can not rely on the ordinary denotation of words. Unless a word be carefully guarded, it will ordinarily lead to the context of nature, to the manifold of bodies in space and time. This fact affords a perennial and abundant source of confusion, from which there is no escape save through the creation of a technical vocabulary. Bacon's observations on this matter are worthy of being quoted in full. "Now words," he says, "being commonly framed and applied according to the capacity of the vulgar, follow those lines of division which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change. Whence it comes to pass that the high and formal discussions of learned men end oftentimes in disputes about words and names, with which (according to the use and wisdom of the mathematicians) it would be more prudent to begin, and so by means of definitions reduce them to order."[6]

[4] Chesterton, "The Ball and the Cross," p. 96.

[5] Toland, "Christianity not Mysterious," second edition, p. 30.

[6] Bacon, "Novum Organum," edition of Ellis and Spedding, Vol. IV., p. 61.

Definition, then, means in the first instance, the unequivocal and conventional reference of words. But there is a further question which arises from the use of single words to refer to complex objects. If such a reference is to be unequivocal it is necessary that there should be a verbal complex mediating between the single word and the complex object. Thus if a circle is defined as "the class of points equidistant from a given point," this means that a circle is a complex object whose components are specified by the words in the above phrase. The single word is virtually an abbreviation of the phrase. The clarity of words depends in the end on their possessing a conventional reference to simple objects. But with the progress of analysis and the demonstration of the unsuspected or unexplored complexity of things, the single word which at first denoted the object in its pre-analytical simplicity, comes to stand for several words which denote the components of the object in their post-analytical simplicity. Definition, then, means two things: first, a convention regarding the substitution of a single word for a group of words; second, a convention regarding the reference of single words to simple objects.[7]

3. *Analysis.*—I am using the term "analysis," to refer not to the special method of any branch of knowledge, but to what I take to be the method of exact knowledge in general. I mean simply that method of procedure in which the problematic is discovered to be a complex of simples. Such procedure may lead to the discovery of fine identities in the place of gross differences, or fine differences in the place of gross identities. Analysis in this sense means only the careful, systematic, and exhaustive examination of any topic of discourse. It can not, then, be proper to assert that such procedure destroys its object. It does, it is true, require that naïveté and innocence of mind shall give place to sophistication; or that ignorance shall give place to some degree of explicitly formulated knowledge. But even the discovery that such psychological or moral values are lost is itself the result of analysis. Nor is there any difficulty in providing a place for such values within the psychological or moral systems to which they belong. In the second place, it can not be proper to assert that there is anything which necessarily escapes analysis, such as "real" change or "real" activity. The method of analysis does not require that change and activity shall be anything other than what any investigation shall discover them to be. Analysis may show either that they are unanalyzable or that they may be further reduced. If they turn out to be unanalyzable, it can only be because they exhibit no complexity of structure, no

[7] The definition of things, rather than words, is apparently the same as knowledge in general.

plurality of necessary factors. If they turn out to be reducible, then they must be identical with the totality of their components. If they appear to differ from such a totality, then they must appear so to differ in some respect, and this respect must at once be added to complete the totality. It is especially important not to forget the combining relations. A toy is not identical with the collection of the fragments into which it has been shattered, but it is identical with these fragments in that particular arrangement which has been destroyed. Similarly dynamics does not reduce motion to the occupancy of positions, but to the occupancy of positions *in a temporal order*. There is a perfectly clear difference between geometry or statics, on the one hand, and dynamics on the other. It is important also not to confuse analysis and synthesis with the physical operation that often accompanies them. For the purposes of knowledge it is not necessary to put Humpty Dumpty together again, but only to recognize that Humpty Dumpty is not himself unless the pieces are together.

The common prejudice against analysis is due in part to this false supposition that it is an attempt to substitute a *collection* of parts for an *arrangement* of parts. But it is due also to a more or less habitual confusion between things and words. Those who have employed the analytical method have been by no means guiltless in the matter. So soon as any word obtains currency it begins to pose as a thing in its own right, and discourse is constantly tending to take on the form of a logomachy. It has not unnaturally been supposed that analysts intended to verbalize reality, to give to its parts the artificial and stereotyped character of words, and to its processes the formal arrangement of grammar. But, as we have already seen, verbalism can not be avoided by a deliberate carelessness in the use of words. If words are to be both useful and subordinate, it is necessary that they should be kept in working order, like sign-posts kept up to date, with their inscriptions legible and their pointing true.

4. *Regard for Logical Form.*—Logic is at the present time in a state of extraordinary activity, and able both to stimulate and to enrich philosophy. The principal contribution which modern logic is prepared to make to philosophy concerns the form of exact knowledge. This problem is by no means wholly solved, and I believe that there is an important work to be done which only philosophers can do. But the mathematical logicians have already broken and fertilized the ground. The theory of relations, the theory of "logical constants" or indefinables, the theory of infinity and continuity, and the theory of classes and systems, concern everything fundamental in philosophy. No philosopher can ignore

these and like theories without playing the part of an amateur. The mathematical logicians may be quite mistaken, or they may have failed to go to the root of things; but in that case they must be overtaken in their error and corrected on their own grounds, if the field of scientific philosophy is not to be abandoned to them altogether. The present situation is certainly intolerable. For philosophy deals with the same topics as modern logic, but treats popularly and confusedly what modern logic treats with the painstaking thoroughness and exactness of the expert.

There is another respect in which modern logic should be of service to philosophy. In the course of a reconstruction of the foundations of mathematics, certain general canons of good thinking have come to light; and these are directly applicable to philosophical procedure.[8] I refer to such canons as "consistency" and "simplicity." These canons are new in the sense that they are now well enough defined to afford a means of testing any theory. A theory is consistent when its fundamental propositions actually generate terms, or when a class can be found which they define; and a theory is simple when none of its fundamental propositions can be deduced from the rest. It behooves philosophy, then, both to ally itself with logic in the investigation of the most ultimate concepts, such as relation, class, system, order, indefinable, etc., and also to apply to its own constructive procedure the most refined tests of scientific form.

5. *Division of the Question.*—Although philosophy is especially charged with correcting the results obtained in each special investigation by results obtained from other investigations, it is folly to ignore the necessity, humanly speaking, of dealing with one problem at a time. Not only is the attempt to raise and answer all questions together futile, but it prevents either definiteness of concepts or cogency of reasoning. Exact knowledge must be precisely limited in its application. A disposition in philosophy to employ terms in an unlimited sense, and to make unlimited assertions, is doubtless the principal reason why philosophy at the present time possesses no common body of theory. And for the same reason philosophy is today without any common plan of work to be done. English and American philosophers have been much exercised during the last decade over what is called "the problem of truth." It is assumed that the various parties to this discussion are referring to the same thing. But it is doubtful if this would ever be suspected if they did not specifically mention one another's names and writings. I venture to say that these quarrels are due less to disagreement on the merits

[8] Cf. Schmidt, "Critique of Cognition and its Principles," this JOURNAL, Vol. VI., No. 11.

of any question, than to an irritable determination to be heard. If a sober and patient attempt were made to reduce the present differences of philosophical opinion to debatable propositions, the first result would be a division of the question at issue. It would certainly appear that the present-day problem of truth is one problem only so long as it is a symbol of factional dispute; discuss it, and it at once proves to be many problems, as independent of one another as any problems can be. I have recently been interested in enumerating some of these problems; and without any attempt to be exhaustive, I find as many as seven: (1) The problem of non-existence: What disposition is to be made of negated propositions, of non-temporal propositions, and of imaginary propositions? (2) The problem of the one and the many: How may many elements belong to one system? (3) The problem of logical form: What are the ultimate categories? (4) The problem of methodology: How shall one best proceed in order to know? (5) The problem of universality: How can that which is known at a moment transcend that moment? (6) The problem of the values of knowledge: What are the criteria of right believing and mistaking? (7) The problem of the relation between belief and its object: In what respect does belief directly or indirectly modify its object?

If agreement, or even intelligent disagreement, is to be obtained, philosophical issues must be sharpened. If any steady advance is to be made, special problems must be examined in order, and one at a time. There is a large group of such special problems that is by general consent assigned to philosophy. In addition to those already enumerated, there are such problems as consciousness, causality, matter, particularity and generality, individuality, teleology, all of them problems whose solution is of the first importance both for the special sciences and for religious belief. I do not mean to assert that these problems are not examined by the traditional philosophy, but that they are not sufficiently isolated, that they are not examined with sufficient intensive application. They find their place in most philosophical treatises as applications of a general system, and not as problems to be examined independently on their merits.

6. *Explicit Agreement.*—The recent discussion of the desirability and expediency of a "philosophical platform" has developed a difference of opinion as to whether agreement should be explicit or implicit.[9] Agreement of some sort is conceded to be a desideratum, but there are some who believe that a common tradition or historical background is all that is necessary. Now is it not evident that in theoretical or scientific procedure there *is* no agreement until it is

[9] Cf. Schmidt, Creighton, and Leighton, this JOURNAL, Vol. VI., Nos. 6, 9, 19, 25.

explicitly formulated? The philosophical classics afford no basis for agreement because they are open to interpretation. The difficulty is merely complicated through the necessity of first agreeing on the meaning of a text. To employ terms and propositions in their historical sense is to adopt precisely the course which is adopted by common sense. It means the introduction into what is supposed to be exact discourse of the indeterminate human values with which tradition is encrusted. In exact discourse the meaning of every term must be renewed; no stone can be allowed to go into the building that has not been inspected and approved by the builder. Otherwise the individual philosopher is no more than an instrument in the hands of the *welt-geist.* He must be possessed by a fatalistic confidence that the truth will take care of itself if he only repeats the formulas that he has learned in the schools or in the market place. But the most precious and cherished privilege of philosophy is the critical independence of each generation. Every philosophical reformer from the beginning of European thought has been moved by a distrust of tradition, and has proclaimed the need of a perpetual watchfulness lest the prestige of opinion be mistaken for the weight of evidence.

If agreement is to be based on tradition, then tradition with all its ambiguity, its admixture of irrelevant associations, and its unlawful authority, is made the arbiter of philosophical disputes. That no theoretical difference is ever really judged in this way is abundantly proved from the present situation in philosophy. We sympathize, but we do not agree; we differ, but we do not disagree. It is of more importance in theoretical procedure that two or three should agree, than that all should sympathize. "If the trumpet gives an uncertain Sound," says Toland, "who shall prepare himself to the battle?" Agreement and disagreement alike require the explicit formulation of theories in terms freshly defined. It is not to be supposed that those who insist on the necessity of explicit agreement have in mind any general unanimity. The principle would be satisfied if a single philosopher could be found to agree with himself—provided the agreement were explicit. For then it would be possible for others to disagree with him, and to disagree explicitly. We should then have before us a number of carefully formulated propositions, which could be tested and debated in the light of the evidence; propositions which would be the common property of philosophers and the material with which to construct an impersonal system of philosophical knowledge.

The first duty of philosophers, then, is not to agree, but to make their implicit agreements or disagreements explicit. And I can not see how this duty can be escaped, without an entire abandonment of

philosophy's claim to be a theoretical discipline. If we can not express our meaning in exact terms, in terms that we are willing should stand as final, if like the sophists of old we must make long speeches and employ the arts of rhetoric, then let us at least cultivate literature. At present I fear we are bad scientists and worse poets. But I do not believe that philosophy is necessarily ineffable.[10] I believe rather that the difficulties which some philosophies have in meeting the demands of exact discourse are gratuitous, and are due to a habit of mixing theory, on the one hand, with the history of theory, and, on the other hand, with common belief. It is not necessary that philosophy should abandon its interest in either history or common belief, but it is necessary that it should isolate those interests, and not permit them to compromise its direct study of problems.

7. *The Separation of Philosophical Research from the Study of the History of Philosophy.*—A problem can be solved only by the attentive examination of that which the problem denotes. But a problem of historical exegesis, and an original philosophical problem, necessarily denote different things and direct the attention to different quarters. Thus the problem of *Hume's conception of causality* directs attention to a text, whereas the problem of *causality* directs attention to types of sequence or dependence exhibited in nature. It is worth while to formulate this commonplace because there is a present-day habit of procedure that obscures it. It is customary to assume that it is the mark of rigorous scholarship in philosophy to confine oneself to commentaries on the classics. Now I am not here raising the question of the importance of the history of philosophy. That it has an indispensable place in human culture, and in the discipline of every philosopher, I do not for a moment doubt. But that it has a higher dignity than a direct and independent analysis of special problems seems to me to be nothing more than a superstition. What dignity the history of philosophy possesses it derives from the originality of the individual philosophers whose achievements it records. If philosophy were to consist in the study of the history of philosophy, it would have no history. Doubtless the by-product of originality is charlatanry and sophomoric conceit; but I believe that mankind is as well served by this as by the complacent pedantry which is the by-product of erudition.

But whether the historical form of treatment does or does not lend dignity to philosophical discourse, it certainly adds complexity and difficulty. Ferrier, good Hegelian though he was at heart, confided to his readers the hopelessness of undertaking to show whether his conclusion agreed with Hegel's or not. "It is impossible to say to what extent this proposition coincides, or does not coincide, with his opinions; for whatever truth there may be in Hegel, it is

[10] Cf. Sheffer, "Ineffable Philosophies," this JOURNAL, Vol. VI., No. 5.

certain that his meaning can not be wrung from him by any amount of mere reading, any more than the whiskey which is in bread . . . can be extracted by squeezing the loaf into a tumbler. He requires to be *distilled,* as all philosophers do more or less—but Hegel to an extent which is unparalleled. A much less intellectual effort would be required to find out the truth for oneself than to understand *his* exposition of it."[11] I do not believe that Ferrier exaggerates the difficulty of historical exegesis. For it is not only true that the great philosophies require to be distilled; they also require to be translated from the terms of their own traditional context to the terms of another. And there must always, I believe, be a large marginal error in any such interpretation. This being the case, it is not only gratuitous, but suicidal, to add the difficulties of this problem to the difficulties of each special philosophical problem.

8. *The Separation of Philosophical Research from the Interpretation of Established Belief.*[12]—There is one further principle of procedure that is implied by those already formulated. Philosophy may be said to have two general functions, the function of research and the function of mediation. By the former I mean the examination of a group of special problems in a detached and theoretical manner, and with as great technical exactness as it is possible to obtain. By the latter I mean the interpretation and reconstruction of common sense and religious belief. These two functions should be separated with some care and nicety. To be more explicit, it seems to me to be necessary for philosophy to develop a vocabulary of its own, in which the terms shall signify concepts reached by methodical analysis. Such a tendency is already apparent in the gradual abandonment by philosophy of such terms as "God," "soul," "freedom," and "immortality"; terms that belong to a universe of discourse that is practically intelligible but theoretically inexact.

There will always remain a task which I am sure no philosopher will desire to shirk, the task of mediating between the technicalities of a scientific philosophy and the funded or institutional beliefs of mankind. This task is one that requires a humanity and sympathy which no technical competence can supply. But it can be the more effectually accomplished if philosophy be rid, as physical science is rid, of confusions between the symbols of exact thought and the symbols of life. The greatest service which knowledge can render to civilization is its indirect service, in which it is first refined according to its own standards, and then brought into circulation.

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[11] Ferrier, "Institutes of Metaphysics," pp. 96–97.

[12] I have dealt with this matter at length in an article entitled "Theories and Beliefs," in the *Harvard Theological Review,* Vol. III., No. 2.

THE PHYSIOLOGICAL SUPPORT OF THE PERCEPTIVE PROCESSES

THE problem which I propose is that of the relation between the processes upon which our perceptive elaborations and interpretations are built and their physiological basis or accompaniments. The usual view, often implied rather than expressed, is that the physiological adjustments take place primarily and tentatively; and that when they have brought in their verdicts, the data are then taken in hand and the mental interpretation built upon them. In the simpler processes, particularly in an undeveloped situation, sensory factors are dominant; and there may be very slight elaboration. This is characteristically true of animal perception and of the earlier stages of human mental life. It is also fairly true for all experimental stages in which there is little familiarity and the final issue is uncertain. In all these cases the dependence upon the physiological clues is probably close and direct; and the interpretation waits for the data to emerge and develop before it itself takes on a more definite form. On the other hand, in the case of expert and complex as well as familiar perceptions, it is urged that this relation is very decidedly different; and that this difference of status has been curiously overlooked in the standard descriptions as well as in experimental work concerning the relation of support between physiological clues and psychological results. It is the general law that our interest is in the issue, the result, and not in the process. Because of this principle there comes to be a science of psychology which has for its special purpose the detection and description of these relations that modify, while yet they evade conscious report. The principle also emphasizes that factors too slight or too suppressed to serve as the explicit basis of perception, none the less influence and even directively shape the conscious issue. What is meant by speaking of these factors as in their kinship physiological is often just this: that they serve their function in this suppressed or detached or embryonic manner, while yet they contribute to the determination of what emerges as a consciously matured perception.

To state the present thesis at once: it is maintained that in all elaborate perception the anticipatory effort, which seizes the issue as soon as there is the slightest chance to shape it, is dominant; and that the physiological processes act more to corroborate and reenforce the perception than actually to support or supply it. It is of course true that there must be some sort of physiological impression in order to serve as an actual sensory situation; and the contention is only that this is slight, that it acts merely as an index or clue, and that the clue serves to set off a prepared mechanism. This is equivalent

to saying that our perceptive processes are so much more dominantly psychological that the physiological aspect is suppressed, minimized, and at times disregarded.

The principle will be clear if presented in terms of the visual processes. It was through the study of these that doubt arose as to the validity of the ordinary statement—and a view developed that received an unexpected experimental confirmation. The situation in regard to vision is also peculiarly precise and definite in the case of the perception of distance. The physiological adjustment for distance is the accommodation-process in each eye, together with the convergence-process of the two eyes jointly, and also the important spacial relations on the two retinæ. It is commonly said, and with substantial correctness, that the order of prominence of these three factors, despite some variability, is at least constant in this respect; that the motor processes of adjustment in terms of convergence represent the final stage of the physiological support; that suggestions or indications of distances possibly appear in an undeveloped situation in terms of the retinal relation, which at once pass over into the development of sharp and precise images (for which accommodation is necessary), the whole being then completed and matured by inducing the convergence-shiftings which effect and corroborate the inference of distance. All this appears convincingly in the ordinary stereoscopic view, particularly when it requires a slight adjustment. In this statement we leave out of account the secondary factors of light-and-shade and all the other aids to distance-perception, and confine attention to those factors which have a strong physiological support. In regard to this, the ordinary view then states that we accommodate and converge and coordinate; and when this has been done, there develops an estimate of distance which is then handed over to the perceptive process, which accepts it, refines it, and expresses it in such mental relations as suit the purpose of the situation. This description seems both inaccurate and irrelevant. In its place it is contended that the least possible physiological process is performed—just enough to get some suggestion of what the image may mean, and then at once the perceptive processes take up the situation; and the physiological processes come in merely to reenforce and support a conclusion to which they have contributed but very slightly. While thus the two views have something in common, in the main the principle thus stated is the exact reversal of the ordinary relation.

The experimental evidence was gathered in connection with the attempt to estimate absolutely and relatively the distance from the observer of minute points of light in a dark room. These points of light may be made to appear and disappear always in the same

line; and at times the observer was asked merely to estimate the distance of the point of light from his eye, and again, when two lights were exposed successively, to determine which was nearer and which farther. The estimates of different individuals were so entirely at variance that the conclusion was unmistakable that they were not due to physiological processes. The conclusion was equally obvious that in a situation like this, where the possibility of psychological development was withdrawn, the physiological support was almost helpless. It is important to explain that the conditions of these experiments were much more rigid than those usually employed, and that the rigidity of these conditions was made necessary because of the increasing conviction that the one thing which the eyes will not do, if they can avoid the burden, is to judge distance by physiological factors. In experimenting with slighter precautions, it was found that in one series of rather unusually correct visual judgments in the dark room, the result was due to an unconscious auditory perception,—the subject really gaining his estimate of distance according to the steps or the inferred position of the assistant who gave auditory clues as he walked from place to place to set the points of light. It was found, further (what is not unknown), that a slight glimmer of light in the dark room often completely changes the situation; and that it does so because this slight illumination enables the subject to see other portions of the room and thus to judge distance not in terms of accommodation and convergence, but of relative arrangement of objects in the room. Even in a bare room it was found that the floor-boards, the optical table, or any basis of support for the stimuli was enough to give a clue to the arrangement; and that as soon as such clue was available the physiological processes dropped to a wholly secondary position. Accordingly, in the final arrangements, the room is completely dark and neither the subject nor the assistant is at any time in the room. The assistant manipulates the apparatus by cords and pulleys in an adjoining alcove; and the subject is placed outside the room, viewing his spots of light through an opening in a screen ordinarily closed, but at the moment of observation exposed by a shutter. More than that, it was found highly desirable that the subject should never have entered the dark room, and if possible should be wholly ignorant of the size or nature of the space into which he is looking. It is not an unnecessary refinement to avoid these suggestions, to arrange that the subject be blindfolded before he enters the building and be taken by a devious way to a preliminary dark room where his eyes may be adjusted, and then led to his position without having any notion whatever of the depth or character of the space in which the points of light are to be exposed. While this

procedure may render the subject ill at ease in not quite knowing where he is, it is less objectionable than any definite knowledge of the situation. Under these circumstances points of light which actually were from five to twenty-five feet away may be judged to be as close as five feet and as far away as one hundred yards. It is found (although the experiments need to be repeated to be accepted as conclusive) that the most naïve subjects, when thrown wholly upon the physiological support, are so much at sea that their judgments are little more than guesswork.

It appears then that we are so accustomed to work on a psychological basis that when deprived of this basis our judgments are ill at ease, variable, uncertain, and irregular. Indeed, there is convincing evidence in some cases that the subject really forms a general impression of the probability that these lights are about as far off as they would be in a room of about the laboratory size, say fifteen to forty feet, and that this unconscious inference is still effective. The further proof of this relation was obtained by experimenting first with uninformed subjects and then allowing a glimmer of light to enter the room. This might be so slight that the subjects themselves did not distinctly perceive it, but it evidently gave them some suggestion of the arrangement and from then on their judgments of the spots of light were definite and accurate. These conclusions, which may be interpreted to mean that all sorts of suggestive factors which are psychological are far more important than physiological ones, is in a measure consistent. It was found, similarly, that it is far better, in determining the difference between monocular and binocular judgments, not to let the subject realize whether he is using one eye or two. It is better not to call attention to the physiological basis of a perception; and so there was devised a simple screen (which the subject does not see) which allows the assistant to determine whether the right or the left or both eyes shall make the judgment. The inference from these experiments, that a large number of the determinations that have been made to show the effect of convergence and accommodation may be quite erroneous, is clear; and it seems plausible that the very diverse results which different observers have found on this point are largely to be interpreted in terms of the psychological or subconscious suggestions which surround the experiment.

There are two corollaries from this position to which it is well briefly to call attention. The first is as to its applicability to other senses and perceptive processes. It will naturally be applicable in the main to the more inferential and elaborated sense-perceptions; but this view emphasizes the anticipatory factor in all perception. It tells us that we use our sense-impressions only to get clues of

situations and that this will be done whenever possible, although it provides for a very constant stream of reenforcements of this elaborated inference which we are so prone to make, by physiological tests. In the field of auditory perception there is not a great scope for the application of the principle outside of the more generic filling in of the sound impression. This falls outside of the present topic. Yet it is pertinent to refer to the fact that we guess a message through the telephone, if only we hear enough of the sounds with approximate accuracy so that we may make out the words. Yet symbolic interpretation of this kind and the filling in of gaps involve other factors than those here considered. In terms of auditory direction the principle has a limited application; we develop a perception of direction constantly and are uneasy in listening to sound in ignorance of its source. In locating a cricket in a room we always hear it *somewhere,* although the location changes its place and we are conscious of the illusory inference. And so there is a familiar stage-performance in which the artist appears with a violin and gives an acceptable rendition, while the bow is traveling across the strings. But before concluding the performance, he drops violin and bow, but the sounds continue and all the while have actually been due to a vocal imitation of the violin. Yet in all these cases the physiological support has not quite that direct relation to the inference of direction or source of origin that it has in the field of vision. There is a similar situation in the complex sensations that we get while eating. There again we are interested only in identifying the several articles of food placed upon the plate, for we are ill at ease if we do not know what it is we are eating. The esthetic effects of contrasts are at times suggestive. If we take up on the fork something that we have supposed to be potato but which proves to be butter, there is a moment of actual disgust. There is, at all events, an evidence of this tendency of slight physiological support to anticipate the sensation and then to use, as suggested, the data of the sensation to corroborate and reenforce the perception. These are mere analogies; and yet they have value in suggesting that the principle accurately applied in the visual perception of distance has an approximate or a transformed application elsewhere.

The other corollary is that it is owing to this principle that illusions are so common. From this arises a type of illusion which consists in ignoring the physiological support, in not observing that the psychological perception may be corrected by a more careful physiological reference. Whenever, in the perception of distance, one somehow gets the notion that the object is fifteen feet off, he continues to disregard the physiological messages which, if properly attended to, might tell him that the object was only five feet off. One

ignores with erroneous issue the physiological clues when the psychological inference is dominant and strong, and one tends to ignore them without such issue when they merely corroborate a correct perception. In the one case the perception overrides; in the other it almost dispenses with the support.

There is thus proposed an interpretation of the physiological support of a more complex and inferential perceptive process in what seems a more complete setting and a more correct perspective than is usually given; and from a practical point of view this attitude enforces the necessity for the most precise precautions to avoid psychological suggestion in determining physiological constants; and again it enforces a practical precept: that the introspective account of the simplest judgments should be carefully recorded in order to detect the processes by which the perceptive judgment is reached. It will not do to theoreticallly analyze the physiologically supporting processes and state their efficiency in terms uncomplicated by the psychological complexity in which all these are set; and all this is but an illustration of how essential it is to investigate psychologically as a whole what at first seems predominantly a physiological process.

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DISCUSSION

A PROPOS D'UN ARTICLE DE MR. WALTER B. PITKIN INTITULÉ: "JAMES AND BERGSON"

LE dernier numéro du JOURNAL OF PHILOSOPHY contient un article remarquablement clair et précis de Mr. Walter B. Pitkin intitulé "James and Bergson or, Who is against Intellect?" Mr. Pitkin, citant et interprétant un certain nombre de passages de mes travaux, en tire cette conclusion que la divergence est profonde entre les vues de M. le Professeur William James et les miennes, et que c'est à tort que l'auteur du "Pluralistic Universe" a cru que les deux doctrines pouvaient se prêter un mutuel appui. Plus particulièrement, M. Pitkin attaque l'interprétation que M. William James a donnée, dans son sixième chapitre, des vues que j'avais exposées sur les concepts, sur leur origine, leur portée et leur rôle. Comme je tiens, au contraire, l'interprétation de W. James pour parfaitement exacte, comme le chapitre qu' il a bien voulu me consacrer reproduit fidèlement ma pensée (en bien meilleurs termes, d'ailleurs que ceux dont je m'étais servi moi-même), je crois necessaire de remettre les choses au point. Et je profiterai de l'occasion pour dire un mot des questions connexes que Mr. Pitkin soulève en passant.

Mr. Pitkin semble être parti de l'idée qu' il expose dans son avant-dernier paragraphe, et d'après laquelle les concepts, tels que je les entends, feraient partie intégrante de la réalité. Ces concepts seraient "lumps of perfectly real, objective nature." Et Mr. Pitkin ajoute, "These lumps or precipitations are not, 'cut out' of reality, at all, as Professor James construes Bergson. . . . What Bergson sees and apparently James does not is that things are none the less real when they are motionless and external to one another, than when they shoot through one another and interpenetrate and move." Mais, c'est là, au contraire, ce que je ne puis absolument pas admettre. Que certains concepts soient *extraits* par nous de la réalité, cela ne me parait pas douteux; mais je ne conclus pas de là qu' ils y aient été *contenus.* L'appareil photographique *extrait* d'un spectacle mouvant des vues immobiles: il ne s'ensuit pas que les immobilités aient *fait partie du* mouvement. Or, je vois exactement entre la réalité et les concepts les plus voisins d'elle le même rapport qu'entre la scène animée et la photographie instantanée.[1] Que seraient-ce si l'on considerait tous les autres concepts, qui sont bien moins encore que cela,—de simples notes prises *à propos de* cette réalité, et même, le plus souvent, des notes prises sur ces notes! Je n'ai jamais pensé, et je n'ai jamais dit, que "l'immobile fût aussi réel que le mouvant." Bien au contraire, j'ai fait, dans "l'Évolution créatrice," de fréquentes allusions à une thèse que j'ai également exposée ailleurs, et d'aprèes laquelle toute immobilité est relative ou apparente: le mouvement est seul réel, et la permanence même d'une forme n'est que le dessin d'une mouvement.[2] Les plus grosses difficultés philosophiques naissent précisément de ce qu' on met immobilité et mouvement sur la même ligne et de ce qu' on leur attribue une égale réalité. Dès qu' on s'installe dans le mouvement, pour ne plus voir dans l'immobilité qu'une relation ou une négation, beaucoup de ces difficultés s'atténuent et quelques-unes d'entres elles s'évanouissent.

Je n'ai jamais pensé non plus que les choses fussent aussi réelles "when they are external to one another" que lorsque elles "shoot through one another and interpenetrate." Au contraire, j'estime que tout morcelage en *choses* est relatif à notre faculté de percevoir. Nos sens, braqués sur le monde matérial, y tracent des lignes de division qui sont autant de routes frayées à notre action future: c'est notre *action éventuelle* qui nous est renvoyée par la matière, comme par un miroir, quand nos yeux aperçoivent des objets aux

[1] "Evolution creatrice," pp. 328 sqq. Cf. p. 174 et surtout *Introduction à la Métaphysique* (*Revue de Métaphysique et de Morale*, Vol. XI., 1903).

[2] Voir, "l'Evolution creatrice," chapitre iv; et *Introduction à la Métaphysique*, pp. 25 et suivantes.

contours bien nets et les distinguent ainsi les uns des autres.[3] La science, pour fournir des points d'appui à notre imagination, pousse plus loin le morcelage commencé par notre perception naturelle. Elle prolonge le travail de nos sens dans la même direction. Elle décomposera donc en molécules et atomes, ou de toute autre manière, les objets distincts en lesquels nos sens avaient déjà décomposé la matière. Mais atomes, molécules, centres de force, etc., ne me paraissent pas avoir plus de réalité absolue que les "objets distincts" eux-mêmes.[4]

Cela ne veut pas dire que la perception et la science se meuvent dans l'irréel. Mr. Pitkin a cité quelques passages de mes travaux où je dis que notre intelligence "est accordée sur la matière" et que notre physique atteint en droit, sinon en fait, la réalité *absolue.* Il aurait pu en citer encore d'autres. Mais ces passages n'ont pas le sens que Mr. Pitkin leur attribue:—et là pourrait bien être l'origine du malentendu. Il y a en effet deux choses à distinguer dans les données des sens: la perception des *objets,* nettement découpés dans l'espace, et celle des *qualités,* qui forment autant de continuités sensibles. Et il y a aussi deux choses à distinguer dans la science: d'une part les *concepts* et de l'autre les *relations mathématiques* ou lois.

En ce qui concerne d'abord les données des sens, j'ai essayé d'établir que, tandis que le morcelage de la matière en *choses* ou objets est tout relatif à nos besoins, au contraire la perception des *qualités* sensibles est beaucoup plus indépendante du besoin et présente par là une réalité objective supérieure. Sans doute, la perception de ces qualités sensibles n'est pas la même chez tous les êtres conscients; elle doit dépendre du degré de complication et de perfection des organes des sens: plus on s'élève, plus la qualité est concentrée; plus on descend, plus elle est diluée. Mais précisément pour cela nous entrevoyons, à la limite, tout en bas, une dilution extrême qui serait la matérialité même. À cette matérialité, qui est quantité plus encore que qualité, j'attribue une réalité "absolue" dans le même sens où l'on pourrait dire que les mille et mille cellules d'un tissu, aperçues au microscope, ont une réalité absolue par rapport à l'aspect simplifié que le tissu présente à l'oeil nu. Ce n'est pas là ce "horrid absolute" dont Mr. Pitkin évoque le spectre, un absolu étranger à notre représentation ou même simplement distinct d'elle. C'est un absolu qui est perçu en raccourci. Nous tenons ces ébranlements élémentaires, constitutifs de la matière, dans la qualité sensible où ils se contractent, comme nous

[3] "Evolution creatrice," pp. 12, 396, et surtout "Matière et Mémoire," p. 233 et p. 218 sqq. Voir également le chap. I. de ce dernier livre.

[4] "Matiere et Mémoire," p. 221.

tenons les palpitations de notre coeur dans le sentiment général que nous avons de vivre.[5]

C'est en ce sens que le progrès de notre physique me parait la rapprocher de la matière même, dans son essence "absolue." Il y a, en effet, deux parts à faire dans notre science: autre chose est le *concept,* autre chose la *loi* ou *relation mathématique.* Les concepts aident la science, mais ils ne sont jamais pour elle que des schémas provisoires; l'objet dernier de la science est de découvrir des relations mathématiques et même de résoudre la matière en relations de ce genre. Or, j'estime que cette géométrie est le fond même de la matière, qu' elle est immanente à la perception que nous en avons. Notre intelligence, qui va naturellement à la géométrie, est accordée sur la matière. Voilà pourquoi j'ai dit que l'intelligence, si inhabile à comprendre l'esprit, si incompétente dans le domaine de la vie (qui est ce qu' il y a de *positif* dans la réalité) est à son aise dans le domaine de la matière inerte.[6]

Flux posé sur un flux, notre conscience se connait elle-même dans son essence, et connait aussi dans son essence la matière qu' elle touche, avec laquelle elle coincide partiellement. Je ne me représente donc nullement "life as transcending experience," ni la réalité absolue comme placée "beyond the most searching intuition." La vie transcende l'intelligence, mais non pas l'expérience; et elle se saisit absolument elle-même dans une intuition qui, incompléte en fait, peut se compléter indéfiniment.

Ces dernières explications étaient nécessaires, pour indiquer le sens exact de certains passages de mes travaux que Mr. Pitkin a cité. Je ne sais pas si les vues développées dans ces divers passages seraient acceptées telles quelles par M. William James: pour ma part, je n'y vois rien d'incompatible avec l'ensemble de sa doctrine, rien qui excède les limites d'un empirisme radical. Mais là n'est pas la question. Mr. William James n'a voulu exposer, et n'a déclaré prendre à son compte, qu' une certaine théorie des *concepts,* et de la place que l'intelligence occupe dans l'ensemble de la réalité. Sur tout cela il a dit exactement ce que je pense. Je voudrais seulement l'avoir aussi bien dit.

H. BERGSON.

PARIS, le 18 Mai, 1910.

[5] Cf. "Matière et Mémoire," p. 232 en particulier.

[6] J'ai d'ailleurs expliqué comment cette matière est, par rapport à l'esprit, quelque chose de *négatif.* ("Evolution créatrice," pp. 218 sqq.)

REVIEWS AND ABSTRACTS OF LITERATURE

The Psychology of Thinking. IRVING EDGAR MILLER. New York: The Macmillan Co. 1909. Pp. xxv + 303.

In this book we have, as the title indicates, an endeavor to treat the logical processes from the point of view of their psychology. Questions of genesis and function are everywhere in evidence. Taking the point of view of "functional" psychology, the author analyzes thinking into its various phases and interprets each according to its service to the work of adjustment. The presentation is clear, interesting, and replete with well-selected illustrations. The book is written evidently with the idea of reaching teachers quite as much as psychologists, and of offering a helpful treatment of educational psychology and general method. In consequence, the educational application of each point is emphasized, and the training of the various factors involved in the process of thinking is made the subject of special chapters. The book is not technical, nor does it aim to be exhaustive. From the point of view of organization it commands attention as an original effort, and its interpretation of various phases of consciousness is in many respects novel and enlightening.

The functional conception of consciousness regards its service as everywhere one of furthering readjustment. Wherever reflex or habitual activities are unsuccessful or inadequate methods of securing the ends of the organism, there consciousness enters in to effect an improvement. In the words of the author, "It is the factor of variation and of change. It reconstructs old modes of action and organizes new ones to meet needs that can not otherwise be met." Thus, we may assume, all phases of consciousness are merely elements contributing toward this general result of helping us to learn better ways of reacting to our environments. Affective and cognitive consciousness, perception, imagination, conception, reasoning, are but phases in the development of this function.

This general notion of the meaning of the psychical processes is, the author evidently thinks, applied by him in a complete and consistent manner. He insists on "the organic unity of the mental life." Every phase of consciousness involves all the others. It is one of the "fallacies of training" to assume that any sort of mental power can be cultivated in isolation from the others. Consciousness works as a unity. The higher phases differ from the lower ones only in being more elaborate, more complex, more explicit.

But while this view of the nature of the mental life receives abundant statement and application by the author, nevertheless, in his endeavor to define thinking and to state its function he tends to differentiate it from the other sorts of consciousness, and to assign to it alone the use which according to his general theory should belong quite as well to the lower forms of perception and imagination. This tendency is to some extent apparent in his preliminary characterization of thinking as an "active process of going over our ideas, rearranging them, and ordering them to meet some need that can not be met by the more spontaneous and undirected flow of ideas." This definition implies that thinking, or consciously controlled thought, is the only example of "the active process of

going over our ideas, rearranging them, and ordering them to meet some need." Now it is quite likely that in ordinary perception or imagination, where the mind does not reflectively attend to what it is doing, there is some sort of going over of various meanings, and a consequent rearrangement that makes it possible for the organism to react satisfactorily to a new situation without a lot of blind experimentation. Such a view would, at any rate, seem to be necessary in case perception is to find any utility such as the functional theory of mind ascribes to it. If perception involves no process of mental readjustment, then one finds it hard to see what there is in perceptual control of activity beyond mere stimulus and response such as we have in reflex and habitual activity, where, on our theory, consciousness has no function and consequently does not exist.

The tendency to limit the reconstructive activity of thought to those more complete forms of consciousness where deliberation is much in evidence is seen in the distinction between ideo-motor and deliberate action. Here the author simply follows the older psychology. He says, quoting from James, that where "the act occurs immediately and unhesitatingly upon the idea of it," there we have ideo-motor action, but where "there is some conflict of ideas which impedes and delays action until it is settled by reflection" there we have deliberate action and genuine thinking. Now it is the opinion of the reviewer that the fundamental tenet of the functional psychology implies that there is no consciousness save where one can find a degree of conflict of ideas or, in the case of perception, interpretations. Hence ideo-motor action is not an *immediate* outcome of the presence of an idea, but rather the result of the presence of an idea that is sufficiently interesting, plausible, or convincing to suppress all competing ideas. It is in the mental conflict that precedes the triumph of any idea or interpretation in the control of attention that consciousness finds its locus. Such a conflict exists in lieu of the blinder learning of mere trial and error. The experimentation is carried out in idea rather than in fact, and the judgment of some sort of logic is invoked to forestall the judgment of the event. It would seem quite easy to discover even in perception that conflict and resolution of interpretations which indicate the active functioning of mind in the task of furthering readjustment.

The foregoing comment is not offered as a serious criticism on Dr. Miller's book. As a fairly popular presentation of the subject of thinking intended largely for teachers, it could not well have undertaken a more thoroughgoing analysis than has been given. Moreover, in regard to the point at issue, the author errs, if he errs at all, in classical company. However, the reviewer could not forbear to avail himself of this opportunity to point out what seems to him like an inconsistency into which it is very easy for the "functional" psychologist to fall.

In conclusion, it may be reiterated that Dr. Miller has produced a readable, useful and, to say the least, plausible account of the process of thinking. His book should prove especially serviceable to those who are interested in psychology as a foundation for education.

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JOURNALS AND NEW BOOKS

THE PSYCHOLOGICAL REVIEW. March, 1910. *Evolution and Consciousness* (pp. 77–97): C. H. JUDD. – The presidential address before the Psychological Association. "Consciousness is a product of evolution which continues in a higher form the movement which is manifested in all earlier adaptations." "As soon as consciousness was fully evolved the direction of all adaptations was radically modified." "If any scientific explanation of human life is to be attained that explanation must be based on a thorough study of consciousness." Progress is toward increased complexity which tends more and more to make the organism self-sufficient so far as the immediate environment is concerned. Consciousness promotes self-sufficiency by taking up the environment and moulding it to the individual's needs. The laws governing organic and conscious life are therefore inner laws that differ from those of the outer world. When this condition was reached then human imagination began to reorganize the environment in accordance with its own activity. The nutritive system uses the materials of the environment for building itself but does not make over the environment to suit the ends of the individual as man with his highly developed consciousness has more and more been able to do. In addition to this, language, art, etc., have been developed, not because of their biological value in the struggle for existence but because of their value to the conscious life. Changes in consciousness, not changes in bodily organs, account for man's advancing civilization. Consciousness is a cause of events in the physical world. The chemical explanation leaves out the facts of individual organization and consciousness which are causes of what shall take place. We are on the eve of a new type of psychology not unfriendly to biology, yet not dependent upon it, which "Will boldly assert its right to existence as the science which deals in a broad way with the evolutionary processes by which consciousness arose and through which the trend of life has been changed from organic adaptation to intelligent conquest." *The Nature and Causation of Galvanic Phenomenon* (pp. 98–146): BORIS SIDIS. – A continuation by Sidis and Louis Nelson of work carried out by Sidis and Kalmus and reported in the *Psychological Review* for September, 1908, and January, 1909. The evidence shows that "the galvanic phenomenon can only be due to an electromotive force initiated in the organism itself by the psycho-physiological processes under the influences of external stimulation." Investigations made to determine what particular physiological process gives rise to the current led to the final conclusion that "the galvanic phenomenon is due to an electromotive force which is muscular in origin, and other supposed causes are such only as they give rise to muscular contractions." *Personal Differences in Suggestibility* (pp. 147–154): WALTER D. SCOTT. – The writer brings his topic into connection with the problem of special and general ability. Students of the psychology class were tested for suggestibility by more than one method, and the degree of correlation was calculated. The results of two tests are here described. The two individuals that ranked highest in suggestibility in

the first test ranked fifth in the second and the three that ranked fourth in first ranked twelfth, fifteenth, and fifth in second. None had the same rank in the two tests and few anywhere near the same. Other experiments indicated that the same individual differs so much in suggestibility that it is absurd to speak of a person as suggestible without indicating in what line he has been tested.

NOTES AND NEWS

WILHELM OSTWALD reiterates in the introduction to his new work, "Die Entwicklung der Elektrochemie" (Leipzig: J. A. Barth), his theory that "the history of the sciences offers the best and most authoritative material for the study of law in the evolution of mankind." The history of science, as Professor Ostwald sees it, is not merely history for history's sake, but a new method of study, a new way of getting at the results of research. The nineteenth century was too full of creative work in the various fields of science to give historical studies their full play. The new century, on the other hand, though it has achieved already some very remarkable results in the way of positive additions to our knowledge of the forces of nature, will offer a larger field for historical studies, for the reason that the practical value of such studies will be more clearly demonstrated. The author deprecates the idea that pure science can have no connection with life. The great investigators, he says, "were almost without exception in their younger days passionately enthusiastic over some concrete, practical aim, and it was in the course of the further and higher development of these problems (which indeed followed rapidly one upon the other) that they themselves attained a wider and higher point of view. The tree of knowledge raises its crown high in the ether of pure science, but it is rooted in the firm ground of human needs and activities." Electrochemistry is particularly adapted to the subject of historical study in this sense. Its history is not yet more than a century old, and it has received a powerful impetus from men still living. Its documents are all easily available, and require no special linguistic or diplomatic criticism in order to be unearthed and interpreted. Furthermore, its technical importance is evenly balanced with its scientific. In an interesting paragraph the author sets up against each other the great books, works of men of genius, and the text-book writers who usually are men of moderate stature. We find, he says, so much in the original works of the great scientists that has not become part and parcel of the text-book literature. The selective work of the text-book writer is the result of his deliberate judgment, and the mere fact that he has profited by the advance of science does not necessarily give him the requisite critical faculty. He acts as a sieve which retains the wheat but lets the gold sand slip out.—*The Nation.*

THE Sixth Annual Meeting of the Southern Society for Philosophy and Psychology is to be held in conjunction with the meetings of the Southern Educational Association at Chattanooga, Tennessee, December 27–29, 1910.